



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
OFFICE OF RESEARCH AND DEVELOPMENT  
CENTER FOR PUBLIC HEALTH AND ENVIRONMENTAL ASSESSMENT  
RESEARCH TRIANGLE PARK, NC

**External Letter Peer Review of Report “Comparative Assessment of the Impacts of Prescribed Fire Versus Wildfire (CAIF): A Case Study in the Western US.”**

**Charge to the Peer Reviewers**

**Background**

You have been asked to review the Comparative Assessment of the Impacts of Prescribed Fire Versus Wildfire (CAIF): A Case Study in the Western U.S. Westat has been contracted to conduct this External Letter Peer Review on behalf of the Environmental Protection Agency (EPA).

In January 2020, the Wildland Fire Leadership Council (WFLC), which is comprised of Federal, state, tribal, county, and municipal government officials, asked EPA to lead an effort in collaboration with USFS and DOI to conduct an assessment titled: Comparative Assessment of the Impacts of Prescribed Fire Versus Wildfire (CAIF): A Case Study in the Western U.S.. The report contains 9 chapters ranging in length from 9 to 41 pages covering topics that allow for an assessment of the tradeoffs, with a focus on smoke impacts, between different fire management strategies, wildfire, and prescribed fire. Specifically, the report includes discussions of forest conditions and fire management, air quality monitoring as it pertains to wildfires, health and ecological effects of wildfire smoke along with actions individuals can take to reduce wildfire smoke exposure, and the direct and indirect effects associated with fire, along with quantitative analyses that rely on air quality modeling to estimate the potential health impacts and economic implications of changes in air quality associated with wildfire smoke. There are approximately 80 pages of supplemental material in an appendix which provide either background information on some of the modeling components used in the quantitative analyses, or more additional information on some of the studies referenced within the main body of the report. This report is classified as Influential Scientific Information (ISI).

Reviewers are asked to answer a series of charge questions about the report, found below. In responding to charge questions, please delineate between those comments that identify critical deficiencies within the report, and therefore should be addressed prior to finalization, and those comments that identify issues that could be addressed in future analyses. All reviewers are expected to read and comment on the Executive Summary and Chapters 1, 2, and 9 of the report. While reviewers are encouraged to read and review the full report, if specific chapters or charge questions are outside of your area of expertise, you may skip those.

Please provide responses to charge questions in Microsoft Word or Google Docs format.

**Charge Questions**

[Type here]

Overarching Charge Question:

1. Please comment on the overall organization and clarity of the report. Please identify its overall strengths and weaknesses.

Chapter Specific Charge Questions:

*If a question is beyond your technical expertise, please skip it.*

1. Chapter 1 introduces this assessment including the rationale, approach, and goals of the report, along with the appropriate context in which to view the results. Please comment on the completeness of the introductory information. Are there any areas that are unclear, or would benefit from additional information to set the basis of the assessment? Please explain.
2. The structure of this assessment is described in the form of a conceptual framework in Chapter 2. The chapter is intended to set the stage for the remaining chapters and demonstrate how the individual components of the assessment fit together to inform the key questions regarding the air quality, health, and ecological effects of different fire management strategies. Please comment on whether the conceptual framework fully captures the components of different fire management strategies and the corresponding health impacts and damages. Are there specific components that should be added or removed from the framework? How well does the text support the overall framework? Please explain.
3. Chapter 3 outlines baseline forest conditions, defines different fire management strategies, and discusses the role of fire in ecosystems, specifically focusing on the ecosystem of the case study fire locations (i.e., Ponderosa Pine Ecosystems). Please comment on the completeness of this discussion and whether it forms an adequate introduction of the topics.
4. Current air quality monitoring capabilities, as they pertain to wildfire smoke, are a key resource for understanding the specific health effects associated with smoke exposures and are critical to evaluate the performance of air quality models in predicting air quality impacts from wildfires. Chapter 4 discusses current air quality monitoring capabilities for wildfire smoke and associated challenges. Are all relevant capabilities discussed, or is there anything that should be added? Are the strengths and weaknesses of the individual capabilities covered in sufficient detail? Does the presentation of information on monitoring capabilities help to characterize the confidence in the air quality and health and ecological impacts provided in the assessment? Please explain.
5. The main component of this assessment is a novel air quality modeling approach that allows for a comparison of the health impacts between different fire management strategies, discussed in Chapter 6. Chapter 5 outlines the modeling approach employed and the various assumptions and decisions made in the process of modeling both hypothetical fire management strategies as well as prescribed fire. Please comment on the overall modeling approach, specifically the characterization of fuel loads, emissions, and the application of the air quality models, and whether there are inherent limitations that have not been adequately captured within the chapter. Is the chapter clearly written in cohesive way to describe the exercise?
6. Chapter 6 encompasses two components of this report: (1) a discussion of the health effects attributed to wildfire smoke and potential actions that can be taken to reduce exposures to wildfire smoke; and (2) a discussion of the ecological effects of wildfire smoke. Please comment on the following:

- The health effects discussion focuses on U.S.-based epidemiologic studies to support the BenMAP – CE analysis discussed in Chapter 8. Please comment on whether the discussion on the health effects evidence, including the corresponding appendix table, adequately inform decisions on the studies that could be used to estimate health impacts in BenMAP – CE. Have any U.S.- based studies been excluded from the discussion that should be included?
  - The discussion of actions that can be taken to reduce wildfire smoke exposure is aimed at supporting the development of sensitivity analyses in BenMAP – CE to estimate the potential reduction in PM<sub>2.5</sub> exposure from wildfire smoke that could be experienced due to specific actions by the public. Please comment on the adequacy of this discussion, the exposure reduction options characterized, and the overall conclusions of the section.
  - The ecological impacts discussion focuses on those effects attributed to wildfire smoke exposure and deposition. Please comment on the ecological impacts highlighted and whether additional studies/citations should be considered within this section.
7. In fully characterizing the tradeoffs between prescribed fires and wildfires it is necessary to also characterize the non-smoke related damages associated with fire, including impacts on fire fighter health and safety, as well as some additional direct and indirect damages attributed to wildfire smoke. Please comment on the adequacy of these discussions. Are there additional citations or information needed to strengthen this summary? Are there other damages that should be included in this Chapter?
  8. Chapter 8 conducts a BenMAP – CE analysis building off the information presented in the air quality modeling chapter (Chapter 5) and the health effects and exposure reduction sections of Chapter 6. Please comment on (1) the approach used to compare results between the different fire management strategies (2) the sensitivity analyses conducted, and (3) the presentation of results.
  9. Chapter 9 consists of an integrated synthesis of the information presented within this report. Please comment on how well this chapter fully captures the breadth of this report. Are the various factors to consider in examining tradeoffs between the different fire management strategies adequately described? Does it appropriately highlight the strengths and limitations of the assessment, as well as key insights? Please explain.